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Setting Up Performance and Prescriptive Criteria for Domestic Water Use and Construction Waste Generation

Water – Determine whether a representative home in your area is on public domestic water and sewer supply and assign a representative number of residents for the same home used above. Then use the latest available county-level, per capita, per day, domestic water use data available from the US Geological Service (<http://h2o.er.usgs.gov/data.html>) to set a baseline representative domestic water consumption figure (The database differentiates between self-supplied and publicly supplied consumption). If at all possible, work with local resources—county extension service, university extension service, local water board staff—to substantiate your baseline.

There are no national programs with a performance evaluation process for water. Either a local water conservation program would have to be identified or developed, or builders would need to submit independently determined consumption analyses that represent water use reduction on a per capita basis with respect to the USGS local consumption data.

Table of Relative Impact of Indoor Water Conservation Measures

Feature	Daily Use (Gals/day/person)	Upgrade	Improvement %	Final impact (Gals/day/person)
Toilets	19.3	1.6 to 1.0 gpf	37.5	7.2
Clothes washer	16.8	h-axis	30	5.0
Faucets	12.7	2.5 to 2.0 gpm	20	2.5
Showerheads	13.2	2.5 to 2.0 gpm	20	2.6
Dishwasher	1.0	Variable	25	.25
Total	63	n/a	28	17.6
Adj. Total*	43.7	n/a	n/a	10.3

*The adjusted total excludes toilet use because 1.0 gpf fixtures are not widely available in the United States.

The target reduction for water and the relative weight of individual checklist items should be based in part on the relationship between indoor and outdoor domestic water use in your area. Outdoor domestic water consumption is highly variable across the U.S. To estimate your area's outdoor consumption, subtract 69 gallons per person per day (based on the latest Residential End Use Study from American Water Works Association—AWWA) from either your area's USGS average self-supplied or publicly-supplied total (depending on whether you determined your representative home to be self-supplied or publicly-supplied).

Potential indoor efficiency gains are assumed to be adequately based on national average data. In other words, indoor water use is not related to any regional or local phenomenon. The table above presents indoor water consumption efficiency gains based on data cited in the model (AWWA, 1998). For the most up to date information on residential end use of water, see www.awwarf.com/exsums/90781.htm.



Potential outdoor efficiency gains are highly dependent on local environments—plant species, annual precipitation, soil types, etc. Additionally, most of the outdoor water conservation techniques or technologies are interactive in terms of their impacts. Setting both relative weights for checklist items and a realistic efficiency target must be done at the local level on a consensus basis by the developers of the local program. See www.awwa.org/xeriscape/ for resources on xeriscaping.

Use the information presented here on national indoor use, USGS county-level data for total water use, and local or regional information on the impact of outdoor water conservation measures to set a water efficiency target and weight individual water conservation measures.

Construction Waste – Establish a representative construction waste per square foot figure for your area. This can be accomplished using either default waste generation rates from the NAHB Research Center's *Residential Construction Waste Management: A Builder's Field Guide* (<http://www.nahbrc.org>) or by conducting volume- or weight-based assessments on local job sites. Work with local resources—local departments of solid waste, recycling, environmental quality, public works—to substantiate your representative waste generation rate.

There are no national programs with a performance evaluation process for construction waste. Either a local program would need to be identified or developed, or the builder would need to submit job-site specific landfill records that demonstrated a percentage of waste reduction with respect to a square foot generation rate set.

The table below characterizes all of the waste reduction techniques in terms of potential efficiency gains. There is the potential for interaction between the efficient framing techniques and wood recycling. The target reduction and relative weight of each checklist item should be based in part on the feasibility of each option at the local level. The table below can be used to assess the relative impact of each waste reduction strategy.

Table of Relative Impact of Construction Waste Management Measures

Feature	Typical Waste Generation (lbs/sq. ft.)	Efficiency Gain	Impact on total waste generation (% by weight)
Comprehensive efficient framing	1.5	1.5 to 1.0 or .5	15 to 20
Recycle all wood	1.5	1.5 to 0	30 to 40
Recycle all drywall	1.0	1.0 to 0	25
Recycle all OCC	.25	.25 to 0	5 to 10
Recycle all metals	.1	.1 to 0	2 – 5
Contract Language	3 – 5	Highly variable	Highly variable
Job site waste plan	3 – 5	Highly variable	Highly variable

